IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

FG SRC LLC, Plaintiff, v. XILINX, INC., Defendant.	Case No. _____ JURY TRIAL DEMANDED

PLAINTIFF'S ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff FG SRC LLC ("SRC") files this Original Complaint for Patent Infringement ("Complaint") against Defendant Xilinx, Inc. ("Defendant" or "Xilinx"). Plaintiff alleges as follows:

I. NATURE OF THE ACTION

1. This is an action for infringement of U.S. Patent Nos. 7,149,867 (the "'867 patent") and 9,153,311 (the "'311 patent").

2. SRC is a limited liability company incorporated in Delaware and is the successor to SRC Computers, LLC ("SRC Computers").

3. Xilinx, Inc. is a Delaware corporation with its principal place of business located at 2100 Logic Drive, San Jose, California 95154.

II. JURISDICTION

4. This action arises under the Patent Laws of the United States, 35 U.S.C. § 1, *et seq.*, including 35 U.S.C. §§ 271, 281, 283, 284, and 285. This is a patent infringement lawsuit, over which this Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

5. This Court has general and specific personal jurisdiction over Defendant because it is present in and transacts and conducts business in and with residents of this District and the State of Delaware. Defendant is incorporated in the State of Delaware and has conducted and does conduct business therein. Defendant has purposefully and voluntarily availed itself of the privileges of conducting business in the United States and the State of Delaware by continuously and systematically placing goods into the stream of commerce through a distribution channel with the expectation that they will be purchased by consumers in Delaware. Plaintiff's causes of action arise directly from Defendant's business contacts and other activities in the State of Delaware.

6. Upon information and belief, Defendant has committed acts of infringement in this District giving rise to this action and does business in this District, including making sales and/or providing service and support for its customers in this District. Defendant purposefully and voluntarily sold one or more of its infringing products with the expectation that they would be purchased by consumers in this District. These infringing products have been and continue to be purchased by consumers in this District.

III. VENUE

7. Venue is proper as to Defendant under 28 U.S.C. § 1400(b) in that Defendant is incorporated in Delaware and, therefore, resides in this District. *TC Heartland LLC v. Kraft Foods Grp. Brands LLC*, 137 S. Ct. 1514, 1521 (2017).

IV. FG SRC LLC AND DEFENDANT'S PRODUCTS

A. FG SRC LLC

8. SRC Computers was co-founded by Seymour R. Cray, Jim Guzy, and Jon Huppenthal in 1996 to produce unique high-performance computer systems using Intel's Merced microprocessor.

9. SRC is the successor to SRC Computers.

10. Jim Guzy is a co-founder of Intel Corporation and served on Intel's board for 38 years.

11. Mr. Guzy was named to Forbes Midas List, which surveys the top tech deal makers in the world, in 2006 and 2007.

12. Seymour Cray was an American electrical engineer and supercomputer architect who designed a series of computers that were the fastest in the world for decades.

13. Mr. Cray has been credited with creating the supercomputing industry.

14. Unfortunately, Mr. Cray died shortly after founding SRC Computers.

15. But his legacy was carried on by Jon Huppenthal and a talented team of engineers that worked with Mr. Cray and Mr. Huppenthal for decades.

16. SRC Computers' focus was creating easy-to-program, general-purpose reconfigurable computing systems.

17. In early 1997, Mr. Huppenthal and his team realized that the microprocessors of the day had many shortcomings relative to the custom processing engines that they were used to.

18. As a result, they decided to incorporate dedicated processing elements built from Field Programmable Gate Arrays ("FPGAs") and that idea quickly evolved into a novel system combining reconfigurable processors and CPUs.

19. SRC Computers' heterogenous system had 100x performance, $1/50^{th}$ of the operating expense, $1/100^{th}$ of the power usage, and required $1/500^{th}$ of the space of more traditional computer systems.

20. SRC Computers' proven systems are used for some of the most demanding military and intelligence applications, including the simultaneous real-time processing and analysis of

radar, flight and mission data collected from a variety of aerial vehicles in over 1,000 successful counter-terrorism and counter-insurgency missions for the U.S. Department of Defense.

21. SRC Computers offered its first commercial product in 2015 called the Saturn 1 server.

22. The Saturn 1 was 100 times faster than a server with standard Intel microprocessors while using one percent of the power.

23. The Saturn 1 was designed to be used in HP's Moonshot server chassis for data centers.

24. SRC Computers has had over 30 U.S. patents issued for its innovative technology.

25. SRC Computers' patent portfolio covers numerous aspects of reconfigurable computing and has more than 2,090 forward citations.

26. In February 2016, SRC Computers restructured into three new entities: a corporate parent FG SRC LLC, an operating company DirectStream, LLC ("DirectStream"), and a licensing entity SRC Labs, LLC.

B. Accused Products

27. In this complaint, Plaintiff accuses the following Xilinx products (collectively "Accused Products") of infringing the '867 and ''311 patents. For clarity, accused product families are listed, as are exemplary device names and/or part numbers or part number prefixes.

Product Family	**Exemplary Device Names**	**Exemplary Part Numbers and/or Part Number Prefixes**
Alveo accelerator cards	U25, U200, U250, U280	
Kintex UltraScale+ FPGA devices	KU3P, KU5P, KU9P, KU11P, KU13P, KU15P	
Virtex UltraScale+ FPGA devices	VU3P, VU5P, VU7P, VU9P, VU11P, VU13P, VU19P, VU27P, VU29P, VU31P, VU33P, VU35P, VU37P, VU45P, VU47P	
Zynq UltraScale+ MPSoC: CG devices	ZU2CG, ZU3CG, ZU4CG, ZU5CG, ZU6CG, ZU7CG, ZU9CG	

Product Family	**Exemplary Device Names**	**Exemplary Part Numbers and/or Part Number Prefixes**
Zynq UltraScale+ MPSoC: EG devices	ZU2EG, ZU3EG, ZU4EG, ZU5EG, ZU6EG, ZU7EG, ZU9CG, ZU11EG, ZU15EG, ZU17EG, ZU19EG	
Zynq UltraScale+ MPSoC: EV devices	ZU4EV, ZU5EV, ZU7EV	
Zynq Ultrascale+ RFSoC devices	ZU21DR, ZU25DR, ZU27DR, ZU28DR, ZU29DR, ZU39DR, ZU43DR, ZU46DR, ZU47DR, ZU48DR, ZU49DR	
Kintex UltraScale FPGA devices	KU025, KU035, KU040, KU060, KU085, KU095, KU115	
Virtex UltraScale FPGA devices	XCVU065, XCVU080, XCVU095, VCVU125, XCVU160, XCVU190, XCVU440	
Spartan 7-Series FPGA devices		XC7S6, XC7S15, XC7S25, XC7S50, XC7S75, XC7S100
Artix 7-Series FPGA devices		XC7A12T, XC7A15T, XC7A25T, XC7A35T, XC7A50T, XC7A75T, XC7A100T, XC7A200T
Kintex 7-Series FPGA devices		XC7K70T, XC7K160T, XC7K325T, XCE7K325T, XC7K355T, XCE7K355T, XC7K410T, XCE7K410T, XC7K420T, XCE7K420T, XC7K480T, XCE7K480T
Virtex 7-Series FPGA devices		XC7V585T, XCE7V585T, XC7V2000T, XC7VX330T, XCE7VX330T, XC7VX415T, XCE7VX415T, XC7VX485T, XCE7VX485T, XC7VX550T, XCE7VX550T, XC7VX690T, XCE7VX690T, XC7VX980T, XCE7VX980T, XCVX1140T, XC7VH580T, XC7VH870T

Product Family	**Exemplary Device Names**	**Exemplary Part Numbers and/or Part Number Prefixes**
Zynq-7000 SoC devices	Z-7007S, Z-7012S, Z-7014S, Z-7010, Z-7015, Z-7020, Z-7030, Z-7035, Z-7045, Z-7100	XC7Z007S, XC7Z012S, XC7Z014S, XC7Z010, XC7Z015, XC7Z020, XC7Z030, XC7Z035, XC7Z045, XC7Z100

28. Each of the Accused Products includes an FPGA.

29. In contrast to a purpose-built chip which is designed with a single function in mind and then hardwired to implement it, an FPGA is more flexible.

30. An FPGA can be programmed in the field, after it has been plugged into a socket on a PC board.

31. FPGAs are based around a matrix of configurable logic blocks (CLBs) connected via programmable interconnects.

32. FPGAs can be reprogrammed to desired application or functionality requirements after manufacturing. This feature distinguishes FPGAs from Application Specific Integrated Circuits (ASICs), which are custom manufactured for specific design tasks.

33. Today's FPGAs easily push the 500 MHz performance barrier.

34. Programming an FPGA is a matter of connecting them up to create the desired logical functions (AND, OR, XOR, and so forth) or storage elements (flip-flops and shift registers).

35. Unlike a CPU which is essentially serial (with a few parallel elements) and has fixed-size instructions and data paths (typically 32 or 64 bit), an FPGA can be programmed to perform many operations in parallel, and the operations themselves can be of almost any width, large or small.

36. The highly parallelized model in FPGAs is ideal for building custom accelerators to process compute-intensive problems.

37. Properly programmed, an FPGA has the potential to provide a 30x or greater speedup to many types of genomics, seismic analysis, financial risk analysis, big data search, and encryption algorithms and applications.

38. The Alveo U200 provides up to 90x higher performance than CPUs on key workloads at 1/3 the cost.

39. The Alveo U280 provides up to 3000 times higher throughput than CPUs on key workloads such as Key-Value-Store.

40. Defendant's customers can use FPGAs to accelerate its applications more than 30x when compared with servers that use CPUs alone.

41. The speed increase is a result of the FPGAs handling compute-intensive, deeply pipelined, hardware-accelerated operations, which also allows for highly parallelized computing.

V. DEFENDANT RECEIVED CONSTRUCTIVE AND ACTUAL NOTICE

42. SRC Computers complied with 35 U.S.C. § 287 by (i) placing the required notice on all, or substantially all, of its products made, offered for sale, sold, or imported into the United States, or (ii) providing actual notice to Defendant.

A. Constructive Notice to Defendant.

43. For example, SRC Computers placed notices such as the following on all, or substantially all, of its products since at least February 19, 2013:[1]

[1] *E.g.,* https://web.archive.org/web/20100930014237/http://www.srccomp.com/techpubs/patentedtech.asp.

44. The website listed in the notice, WWW.SRCCOMP.COM/ TECHPUBS/PATENTEDTECH.ASP, stated the following:

> **SRC® PATENTED TECHNOLOGY**
>
> SRC Computers holds fundamental U.S. and foreign patents covering hardware and software techniques for vastly accelerating data processing through the use of reconfigurable elements comprising one or more Direct Execution Logic blocks operating in conjunction with one or more commodity microprocessors.
>
> SRC patented technology, with filing dates back to 1997, also includes a number of general applications of Direct Execution Logic computing systems for parallelizing the execution of user-defined algorithms including acceleration of web site access and processing.
>
> SRC Computers has exclusive rights to the following patents:

45. The website also listed at least the following patents since September 30, 2010. The ’867 patent, asserted in this case, is highlighted:

Patent #	Patent Title
6,026,459	System and method for dynamic priority conflict resolution in a multi-processor computer system having shared memory resources
6,076,152	Multiprocessor computer architecture incorporating a plurality of memory algorithm processors in the memory subsystem
6,247,110	Multiprocessor computer architecture incorporating a plurality of memory algorithm processors in the memory subsystem
6,295,598	Split directory-based cache coherency technique for a multi-processor computer system
6,339,819	Multiprocessor with each processor element accessing operands in loaded input buffer and forwarding results to FIFO output buffer
6,434,687	System and method for accelerating web site access and processing utilizing a computer system incorporating reconfigurable processors operating under a single operating system image
6,356,983	System and method providing cache coherency and atomic memory operations in a multiprocessor computer architecture
6,594,736	System and method for semaphore and atomic operation management in a multiprocessor
6,627,985	Reconfigurable processor module comprising hybrid stacked integrated circuit die elements
6,781,226	Reconfigurable processor module comprising hybrid stacked integrated circuit die elements
6,836,823	Bandwidth enhancement for uncached devices
6,941,539	Efficiency of reconfigurable hardware
6,961,841	Multiprocessor computer architecture incorporating a plurality of memory algorithm processors in the memory subsystem
6,964,029	System and method for partitioning control-dataflow graph representations
6,983,456	Process for converting programs in high-level programming languages to a unified executable for hybrid computing platforms
6,996,656	System and method for providing an arbitrated memory bus in a hybrid computing system
7,003,593	Computer system architecture and memory controller for close-coupling within a hybrid processing system utilizing an adaptive processor interface port
7,124,211	System and method for explicit communication of messages between processes running on different nodes in a clustered multiprocessor system
7,126,214	Reconfigurable processor module comprising hybrid stacked integrated circuit die elements
7,134,120	Map compiler pipelined loop structure

7,149,867	System and method of enhancing efficiency and utilization of memory bandwidth in reconfigurable hardware
7,155,602	Interface for integrating reconfigurable processors into a general purpose computing system
7,155,708	Debugging and performance profiling using control-dataflow graph representations with reconfigurable hardware emulation
7,167,976	Interface for integrating reconfigurable processors into a general purpose computing system
7,197,575	Switch/network adapter port coupling a reconfigurable processing element to one or more microprocessors for use with interleaved memory controllers
7,225,324	Multi-adaptive processing systems and techniques for enhancing parallelism and performance of computational functions
7,237,091	Multiprocessor computer architecture incorporating a plurality of memory algorithm processors in the memory subsystem
7,282,951	Reconfigurable processor module comprising hybrid stacked integrated circuit die elements
7,299,458	System and method for converting control flow graph representations to control-dataflow graph representations
7,373,440	Switch/network adapter port for clustered computers employing a chain of multi-adaptive processors in a dual in-line memory module format
7,406,573	Reconfigurable processor element utilizing both coarse and fine grained reconfigurable elements
7,421,524	Switch/network adapter port for clustered computers employing a chain of multi-adaptive processors in a dual in-line memory module format
7,424,552	Switch/network adapter port incorporating shared memory resources selectively accessible by a direct execution logic element and one or more dense logic devices
7,565,461	Switch/network adapter port coupling a reconfigurable processing element to one or more microprocessors for use with interleaved memory controllers
7,620,800	Multi-adaptive processing systems and techniques for enhancing parallelism and performance of computational functions

B. Actual Notice to Defendant.

46. Xilinx is well-aware of the patents asserted in this action and that instrumentalities accused herein infringe those patents. On October 18, 2017, SRC Labs sued Amazon Web Services, Inc., Amazon.com, Inc., and VADATA, Inc. (collectively the "Amazon Defendants") alleging infringement of five patents which included the '311 patent and '867

patent. *SRC Labs, LLC v. Amazon Web Services, Inc.*, No. 1-17-cv-01227 (E.D. Va.). The complaint filed in that case (the "Amazon Complaint") alleged that the Amazon Defendants' products infringed the '867 patent and '311 patent based on its usage of Xilinx FPGA products.

47. Moreover, specifically, the Amazon Complaint included—as Exhibit G—a publicly-available claim chart demonstrating how the Amazon Defendants' product EC2 F1 Instance infringed the '867 patent based on its usage of a Xilinx UltraScale+ FPGA. Plaintiff accuses Defendant of that device of infringing the '867 patent in this complaint.

48. The Amazon Complaint also included—as Exhibit J—a publicly-available claim chart showing how the Amazon Defendants' product EC2 F1 Instance infringed the '311 patent based on its usage of a Xilinx UltraScale+ FPGA.

49. After learning that usage of its products infringed the '867 patent and '311 patent, on July 13, 2018 Xilinx filed a petition for *inter partes* review, requesting that the Board of Patent Trials and Appeals cancel claims 1 through 5 and 8 through 10 of the '311 patent. IPR2018-01395 (hereinafter "the Xilinx IPR"), Paper No. 1. In its petition, Xilinx noted the complaint against the Amazon Defendants and admitted that "Amazon and Xilinx have a customer/supplier relationship" and that "Xilinx Ultrascale+ FPGAs and its Vivado Design Suite are referenced in the SRC Labs complaint . . ." That petition was denied on January 23, 2019. IPR201801395, Paper No. 17.

50. The district court case against the Amazon Defendants was transferred to the Western District of Washington on March 1, 2018. *SRC Labs, LLC et al v. Amazon Web Services*, Inc., No. 2-18-cv-00317 (W.D. Wa.).

VI. THE PATENTS

A. All Asserted Patents are Owned by SRC.

51. On January 22, 2020, DirectStream assigned both the ’867 patent and ’311 patent to SRC. The assignment was recorded with the USPTO on January 24, 2020 at Reel/Frame 051615/0344.

52. All maintenance fees have been paid to the USPTO to keep the ’867 patent and ’311 patent enforceable for their full term.

B. Description of the Asserted Patents.

1. U.S. Patent 7,149,867

53. The ’867 patent is entitled “System and method of enhancing efficiency and utilization of memory bandwidth in reconfigurable hardware” and issued on December 12, 2006.

54. A true and correct copy of the ’867 patent is attached as **Exhibit A**.

55. The ’867 patent is valid and enforceable.

2. U.S. Patent 9,153,311

56. The ’311 patent is entitled “System and method for retaining DRAM data when reprogramming reconfigurable devices with DRAM memory controllers” and issued on October 6, 2015.

57. A true and correct copy of the ’311 patent is attached as **Exhibit B**.

58. The ’311 patent is valid and enforceable.

VII. COUNT ONE: DIRECT INFRINGEMENT OF THE ’867 PATENT

59. Plaintiff incorporates by reference all paragraphs above as though set forth herein.

60. Defendant has at no time, either expressly or impliedly, been licensed under the ’867 patent.

61. Defendant has and continues to directly infringe the ’867 patent by making, using, offering for sale, selling, and/or importing in or into the United States in violation of 35 U.S.C. § 271(a) the Accused Products.

62. Defendant’s direct infringement of the ’867 patent by the Accused Products has caused, and will continue to cause, substantial and irreparable damage to Plaintiff. Plaintiff is therefore entitled to an award of damages adequate to compensate for Defendant’s infringement, but not less than a reasonable royalty, together with pre- and post-judgment interest and costs as fixed by the Court under 35 U.S.C. § 284.

63. Plaintiff adopts, and incorporates by reference, as if fully stated herein, **Exhibits C through F**, which are claim charts that describe and demonstrate how the Accused Products infringe exemplary claims of the ’867 patent. These charts collectively show that Xilinx infringes at least claims 1, 3, 4, 9, 11, and 12 of the ’867 patent.

VIII. COUNT TWO: WILLFUL INFRINGEMENT OF THE ’867 PATENT

64. Plaintiff incorporates by reference all paragraphs above as though set forth herein.

65. Defendant has and continues to willfully infringe the ’867 patent.

66. As discussed in § V.B herein, Defendant has long had knowledge of the ’867 patent and that its products infringe that patent.

67. Even if Defendant had not had such knowledge previously, Defendant would learn of the patent and its infringement as a result of the filing and/or service of this complaint, and this district does not require pre-suit knowledge to establish willfulness. *DermaFocus LLC v. Ulthera, Inc.*, 201 F. Supp. 3d 465, 473 (D. Del. 2016).

68. Defendant continued and continues making, using, offering for sale, and selling the Accused Products despite an objectively high likelihood that its actions infringe several claims of the ’867 patent.

69. Defendant has continued its infringement of the ’867 patent despite its knowing that claims 1, 3 through 9, and 11 through 19 of the ’867 patent were held valid on May 10, 2019 by the Patent Trial and Appeal Board in *inter partes* review proceeding IPR2019-00103, a proceeding requested by Defendant’s customers: the Amazon Defendants.

70. Defendant’s actions have not been consistent with the standards of behavior in its industry.

71. Defendant made no effort to avoid infringing the ’867 patent.

72. Therefore, Plaintiff should receive enhanced damages up to three times the amount of actual damages for Defendant’s willful infringement under 35 U.S.C. § 284.

IX. COUNT THREE: DIRECT INFRINGEMENT OF THE ’311 PATENT

73. Plaintiff incorporates by reference all paragraphs above as though set forth herein.

74. Defendant has at no time, either expressly or impliedly, been licensed under the ’311 patent.

75. Defendant has and continues to directly infringe the ’311 patent by making, using, offering for sale, selling, and or importing in or into the United States in violation of 35 U.S.C. § 271(a) the Accused Products.

76. Defendant’s direct infringement of the ’311 patent by the Accused Products has caused, and will continue to cause, substantial and irreparable damage to Plaintiff. Plaintiff is therefore entitled to an award of damages adequate to compensate for Defendant’s infringement, but not

less than a reasonable royalty, together with pre- and post-judgment interest and costs as fixed by the Court under 35 U.S.C. § 284.

77. Plaintiff adopts, and incorporates by reference, as if fully stated herein, **Exhibits G through I**, which are claim charts that describe and demonstrate how the Accused Products infringe exemplary claims of the '311 patent. These charts collectively show that Xilinx infringes at least claims 1, 3, 9, and 10 of the '311 patent.

X. COUNT FOUR: WILLFUL INFRINGEMENT OF THE '311 PATENT

78. Plaintiff incorporates by reference all paragraphs above as though set forth herein.

79. Defendant has and continues to willfully infringe the '311 patent.

80. As discussed in § V.B herein, Defendant has long had knowledge of the '311 patent and that its products infringe that patent.

81. Even if Defendant had not had such knowledge previously, Defendant would learn of the patent and its infringement as a result of the filing of this complaint, and this district does not require pre-suit knowledge to establish willfulness. *DermaFocus LLC v. Ulthera, Inc.*, 201 F. Supp. 3d 465, 473 (D. Del. 2016).

82. Defendant continued and continues making, using, offering for sale, and selling the Accused Products despite an objectively high likelihood that its actions infringe several claims of the '311 patent.

83. Defendant has continued its infringement of the '311 patent despite its knowing that claims 1 through 5 and 8 through 10 of the '311 patent were held valid on January 23, 2019 in the Xilinx IPR.

84. Defendant's actions have not been consistent with the standards of behavior in its industry.

85. Defendant made no effort to avoid infringing the '311 patent.

86. Therefore, Plaintiff should receive enhanced damages up to three times the amount of actual damages for Defendant's willful infringement under 35 U.S.C. § 284.

XI. CONCLUSION

87. Plaintiff is entitled to recover from Defendant the damages sustained by SRC as a result of Xilinx's wrongful acts in an amount subject to proof at trial, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court.

88. Plaintiff has incurred and will incur attorneys' fees, costs, and expenses in the prosecution of this action.

89. Plaintiff reserves the right to amend, supplement, or modify its allegations of infringement as facts regarding such allegations arise during the course of this case.

XII. JURY DEMAND

90. Plaintiff hereby demands a trial by jury for all causes of action.

XIII. PRAYER FOR RELIEF

Plaintiff requests the following relief:

A. A judgment that Defendant has infringed and continues to infringe the '867 patent and '311 patent;

B. A judgment and order requiring Defendant to pay Plaintiff damages under 35 U.S.C. § 284, including treble damages for willful infringement as provided by 35 U.S.C. § 284, and supplemental damages for any continuing post-verdict infringement up until entry of the final judgment with an accounting as needed;

C. A judgment and order requiring Defendant to pay Plaintiff pre-judgment and post-judgment interest on the damages awarded;

D. A judgment and order awarding a compulsory ongoing royalty; and

E. Such other and further relief as the Court deems just and equitable.

Dated: April 30, 2020

Respectfully submitted,

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* Application for *pro hac vice* to be filed